The VV&A Documentation Tool

Automating the VV&A Process

The Navy Modeling and Simulation management Office (NAVMSMO) sponsored the development of the VV&A Documentation Tool to automate the VV&A process.

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Agenda

- VV&A Implementation Portal
- Why use the VDT?
- Benefits to the Navy
- Automation of Navy VV&A Policy
- Implementation of VV&A

VV&A Implementation Portal

- Available through the NAVMSMO web site http://navmsmo.hq.navy.mil/ > VV&A
- Creates a user configurable single log-on web interface to multiple web sites, the VDT, community message boards, and published tools
- Published Tools
  - VDT
  - Risk Matrix 2.0
  - Open Office
  - *Any user defined application published*
- Single-Sign On Web Sites
  - MSRR
  - NTMF
  - *Any user defined web site can be added per account*

Why VDT?...why not MS Word?

- Translates text as data
  - Reuse of VV&A documentation fields across repositories
  - Serialization of text as XML streams to facilitate composable M&S
- Connection to Resources
  - Portal environment gathers multiple applications, repositories, web sites, users

Benefits to the Navy

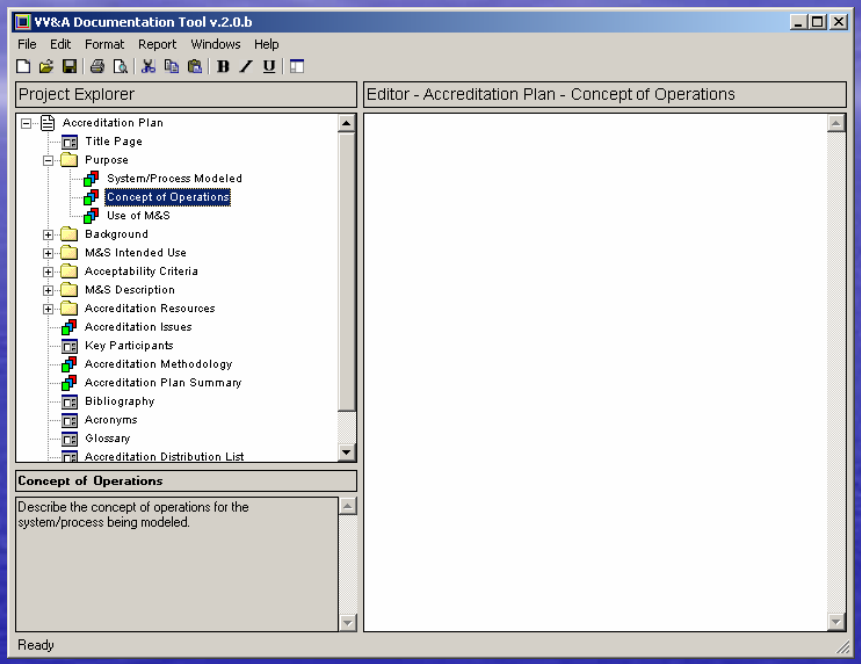
- **Standardization of VV&A Documentation**
- **Supports Navy VV&A Policy**
- **Follows Navy VV&A Handbook**
- **Promotes M&S Reuse**
- **Leverages web-based and XML technologies**
- **Interface with NMSIS**
- **User Friendly**
- **NMCI compatible**
- **Cost effective**

VDT and the VV&A Process

- Accreditation Tasks
- Verification Tasks
- Validation Tasks

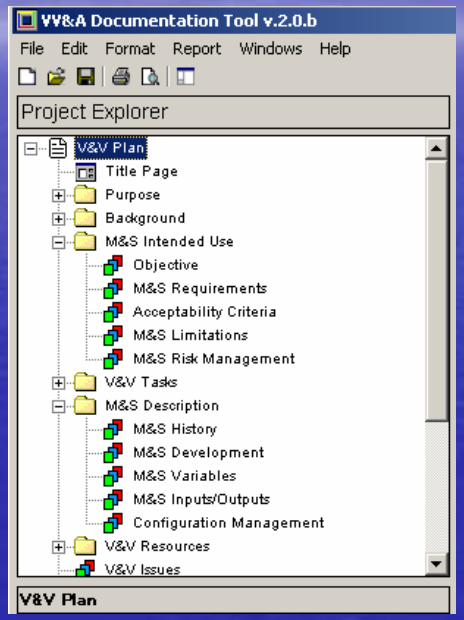
Accreditation Tasks

- Document the acceptability criteria and provides a link to the M&S Requirement
- Tracks Accreditation costs by activity, funding source, estimated to actual



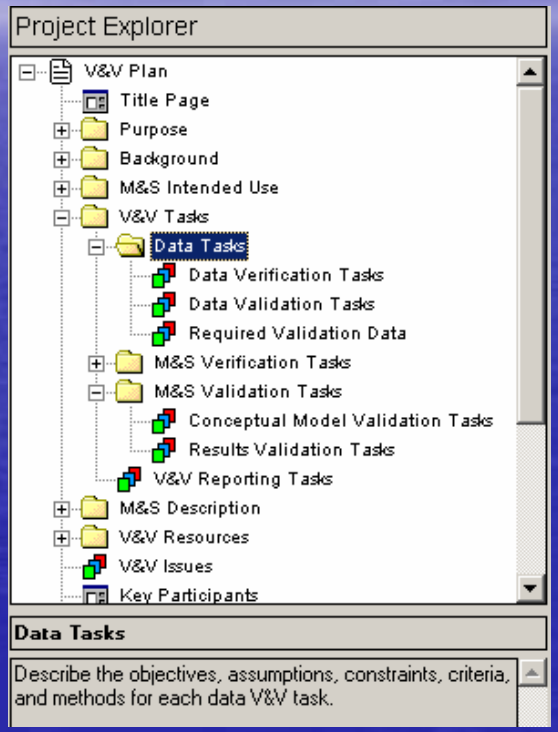
Verification Tasks

- Tracks planning to implementation
  - V&V Plan to V&V Report
    - Design Verification tasks to Implementation
    - Conceptual Model Validation Tasks to Results Validation
  - M&S Verification to M&S Validation
    - V&V Report
    - Design Verification (V&V Plan) to Implementation (Test Plans)
    - Implementation to Results Validation



Validation Tasks

- Compare outputs to real world data
- Identify key SMEs*(*PII compliant*)
- Trace Intended Use to acceptability criteria and M&S requirements
- Document results in the V&V Report and report discrepancies



VVML and the VV&A Portal

- Proposed VVML ("Validation and Verification Markup Language")
  - "The benefits of VVML range from high-level level compatibility with web compatibility with web-based technologies within based technologies within an extensible framework which will enable a generation of M&S applications to emerge"

VV&A Web Services?

- Goal of VVML is to create a VV&A Web Service within the XMSF
- What's a web service
  - No Diagrams please!
- When?
  - First prototype planned January 05

Practical Example - Handbook to VDT

- Example of linking external data to the VDT
  - V&V Plan, Implementation Verification.
- Role of XML
  - Why URI's and the benefit to the user
- Requirements Traceability
  - What this means
  - Linking to external tools

Implementation Verification – Test Results (1)

- **Stats Collecting @ 600.0**
- **Number of Fades 4**
- **Number of false Alarms 3**
- **Number of hits 14**
- **Number of Misses 2**
- **Number of correct rejection 181**
- **reaction time = 0.98562**
- **>>>>>>>>>>>>>>>>>>>>>>>>>>>>>**
- **Stats Collecting @ 1199.9**
- **Number of Fades 0**
- **Number of false Alarms 5**
- **Number of hits 16**
- **Number of Misses 2**
- **Number of correct rejection 177**
- **reaction time = 0.94344**
- **>>>>>>>>>>>>>>>>>>>>>>>>>>>**
- **Stats Collecting @ 1799.80**
- **Number of Fades 0**
- **Number of false Alarms 1**
- **Number of hits 14**
- **Number of Misses 0**
- **Number of correct rejection 185**
- **reaction time = 1.00219**

Uri://vvadom/vvplan/implementationVe/testresults/pr1

- 1. **Record results for each step of the test procedure executed and describe any unresolved anomalies or discrepancies of any kind encountered during the execution of the test.**
- 2. Correlate the pre-test predictions with the test results. Describe and analyze anomalies.
- 3. Include or reference amplifying information that may help to isolate and correct the cause of any discrepancy.
- 4. Provide an assessment by the test conductor as to the cause of each discrepancy and a means of correcting it.

Implementation Verification – Test Results (2)

Period	Pretest Mean ±1s.e.	Posttest Mean ±1s.e.
2	1.1±0.3	5.9±0.4
3	1.0±0.2	7.5±0.5
5	0.9±0.3	5.3±0.5
Combined	1.0±0.2	6.2±0.3

Pre- & Post- Test Contrast:

Period	U-Test Statistic	P
Combined	73.5	<0.001

Posttest Contrast of Performance by Period:

Periods	U-Test Statistic	P
2 & 3	125.0	0.026
2 & 5	242.0	0.401
3 & 5	305.5	0.004

Uri://vvadom/vvplan/implementationVe/correlate/pr1

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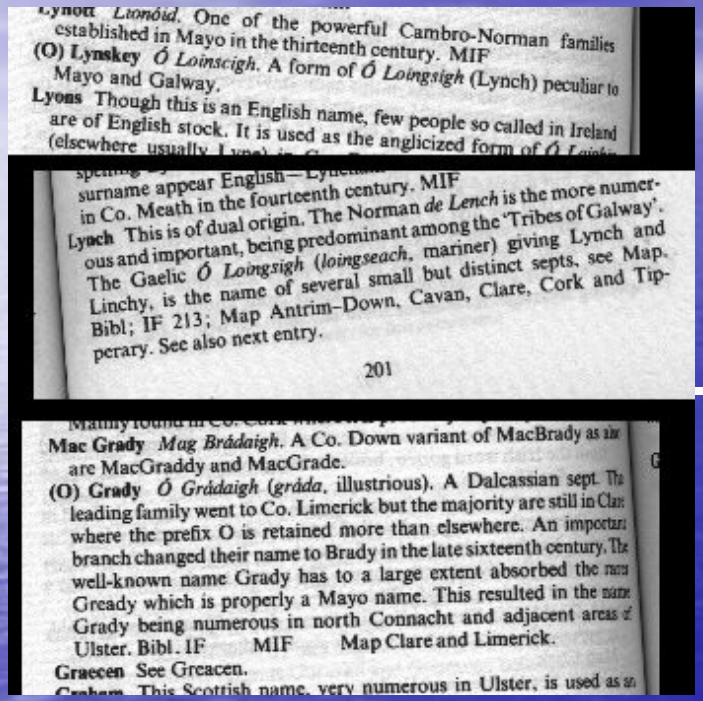
- **3.** Include or reference amplifying information that may help to isolate and correct the cause of any discrepancy.
- **4.** Provide an assessment by the test conductor as to the cause of each discrepancy and a means of correcting it.

Implementation Verification – Test Results (3)



Lynott *Lionóid*. One of the powerful Cambro-Norman families established in Mayo in the thirteenth century. MIF

(O) Lynskey *Ó Loinscigh*. A form of *Ó Loingsigh* (Lynch) peculiar to Mayo and Galway.

Lyons Though this is an English name, few people so called in Ireland are of English stock. It is used as the anglicized form of *Ó*

surname appear English—

in Co. Meath in the fourteenth century. MIF

Lynch This is of dual origin. The Norman *de Lench* is the more numerous and important, being predominant among the 'Tribes of Galway'. The Gaelic *Ó Loingsigh* (*loingseach*, mariner) giving Lynch and Linchy, is the name of several small but distinct septs, see Map. Bibl; IF 213; Map Antrim–Down, Cavan, Clare, Cork and Tipperary. See also next entry.

201

Mac Grady *Mag Brádaigh*. A Co. Down variant of MacBrady as are MacGraddy and MacGrade.

(O) Grady *Ó Grádaigh* (*gráda*, illustrious). A Dalcassian sept. The leading family went to Co. Limerick but the majority are still in Clare where the prefix O is retained more than elsewhere. An important branch changed their name to Brady in the late sixteenth century. The well-known name Grady has to a large extent absorbed the name Gready which is properly a Mayo name. This resulted in the name Grady being numerous in north Connacht and adjacent areas of Ulster. Bibl. IF MIF Map Clare and Limerick.

Graecen See Greacen.

Uri://vvadom/vvplan/implementationVe/reference/pr1

- 1. Record results for each step of the test procedure executed and describe any unresolved anomalies or discrepancies of any kind encountered during the execution of the test.
- 2. Correlate the pre-test predictions with the test results. Describe and analyze anomalies.
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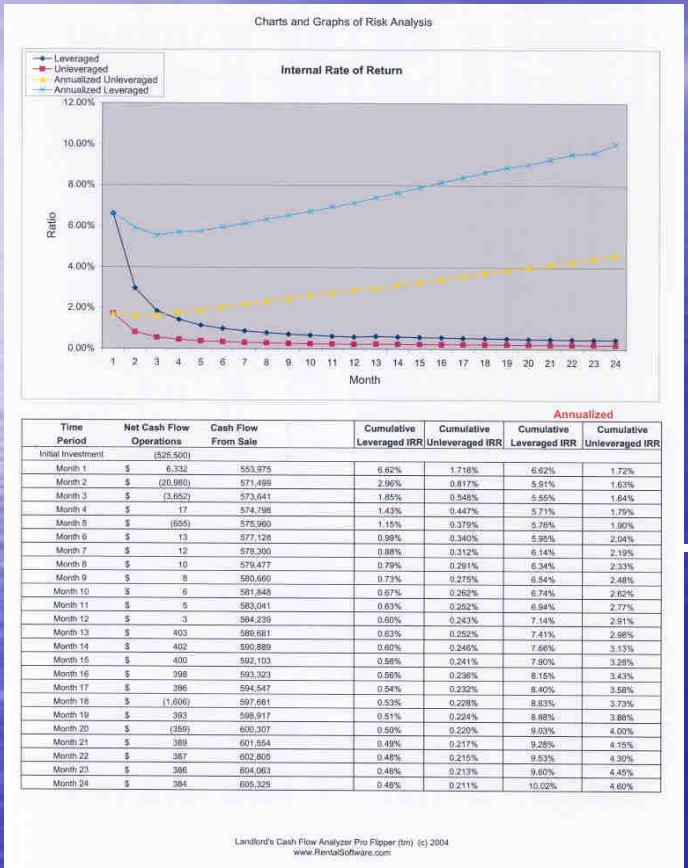
Implementation Verification – Test Results (4)



Time Period	Net Cash Flow Operations	Cash Flow From Sale	Cumulative Leveraged IRR	Cumulative Unleveraged IRR	Annualized Cumulative Leveraged IRR	Annualized Cumulative Unleveraged IRR
Initial Investment	($25,500)					
Month 1	$ 6,332	553,975	6.62%	1.718%	6.62%	1.72%
Month 2	$ (20,980)	571,499	2.96%	0.817%	5.91%	1.63%
Month 3	$ (3,852)	573,641	1.85%	0.548%	5.55%	1.64%
Month 4	$ 17	574,798	1.43%	0.447%	5.71%	1.79%
Month 5	$ (656)	575,960	1.15%	0.379%	5.76%	1.90%
Month 6	$ 13	577,126	0.99%	0.340%	5.95%	2.04%
Month 7	$ 12	578,300	0.88%	0.312%	6.14%	2.19%
Month 8	$ 10	579,477	0.79%	0.291%	6.34%	2.33%
Month 9	$ 8	580,660	0.73%	0.275%	6.54%	2.48%
Month 10	$ 6	581,848	0.67%	0.262%	6.74%	2.62%
Month 11	$ 5	583,041	0.63%	0.252%	6.94%	2.77%
Month 12	$ 3	584,239	0.60%	0.243%	7.14%	2.91%
Month 13	$ 403	589,681	0.63%	0.252%	7.41%	2.96%
Month 14	$ 402	590,889	0.60%	0.246%	7.66%	3.13%
Month 15	$ 400	592,103	0.58%	0.241%	7.90%	3.28%
Month 16	$ 398	593,323	0.56%	0.236%	8.15%	3.43%
Month 17	$ 396	594,547	0.54%	0.232%	8.40%	3.58%
Month 18	$ (1,606)	597,661	0.53%	0.228%	8.83%	3.73%
Month 19	$ 393	598,917	0.51%	0.224%	8.88%	3.88%
Month 20	$ (359)	600,307	0.50%	0.220%	9.03%	4.00%
Month 21	$ 389	601,554	0.49%	0.217%	9.28%	4.15%
Month 22	$ 387	602,805	0.48%	0.215%	9.53%	4.30%
Month 23	$ 386	604,063	0.48%	0.213%	9.60%	4.45%
Month 24	$ 384	605,325	0.48%	0.211%	10.02%	4.60%

Landlord's Cash Flow Analyzer Pro Flipper (tm) (c) 2004
www.RentalSoftware.com

Uri://vvadom/vvplan/implementation/assessment/pr1

- 1. Record results for each step of the test procedure executed and describe any unresolved anomalies or discrepancies of any kind encountered during the execution of the test.
- 2. Correlate the pre-test predictions with the test results. Describe and analyze anomalies.
- 3. **Include or reference amplifying information that may help to isolate and correct the cause of any discrepancy.**
- 4. **Provide an assessment by the test conductor as to the cause of each discrepancy and a means of correcting it.**

What are URI's?

Uri://vvadom/vvplan/implementationve/assessment/pr1

- We use URI's all the time, the following examples illustrate URI's that are in common use.
  - ftp://ftp.is.co.za/rfc/rfc1808.txt -- ftp scheme for File Transfer Protocol services
  - mailto: mduerst@ifi.unizh.ch -- mailto scheme for electronic mail addresses .
- Semantics allow the machine to interpret how to process a header such as "FTP", "HTTP",….
- How a URI is structured within the VVML
  - ***Uri://vvadom/*** = Name of server
  - ***vvplan/implementationve/*** = Document Type, Section
  - ***assessment/pr1*** = reference doc type, project ID
- Provides pointers to data

Report - Based Requirements Traceability

- **Project RTM** – Intended Use linked to M&S Requirement
  - **Accreditation Plan RTM** - M&S Requirement linked to Acceptability Criteria
  - **V&V Plan RTM** - Planned V&V Task linked to Acceptability Criteria
  - **V&V Report RTM** - Implemented V&V Tasks linked to Results (Tests)
  - **Accreditation Report** - Results linked to Acceptability Criteria

M&S REQUIREMENT	Planned V&V Tasks	Implemented V&V Tasks	Acceptability Criteria	Result Validation Task Analysis
Requirement 1	Bookmark to field – **Data Verification Task**	Bookmark to field – **Implementation Verification Task**	LINK TO ACT	RVT
	Bookmark to field – **Data Validation Task**			
	Bookmark to field – **Design Verification Task**			

Blue Columns = Planning *Yellow Columns = Implementation*